

CLAIMS

1. A data transmission method for use in a mobile communication system comprising a communication terminal and a plurality of base stations, the communication terminal being in communication with said plurality of base stations during a soft handover, the method comprising the steps of:
 - receiving a data packet from the communication terminal at the plurality of base stations,
 - checking data integrity of the received data packet at each of the base stations,
 - if data integrity of the received data packet was not acknowledged by a base station, storing the received data packet in a buffer of the respective base station, and
 - if data integrity of the received data packet was acknowledged by a base station, transmitting control information from the respective base station to at least one other base station of said plurality of base stations, wherein the control information indicates that the data integrity of the received data packet was acknowledged.
2. The method according to claim 1, further comprising the step of:
 - in response to receiving said control information at said at least one other base station, flushing the buffer at each base station that did not acknowledge data integrity of the received data packet.
3. The method according to claim 1 or 2, further comprising the step of:
 - transmitting a feedback message from one of said plurality of base stations to the communication terminal indicating whether at least one of said plurality of base stations acknowledged data integrity of the received data packet.
4. The method according to one of claims 1 to 3, further comprising the step of:
 - if a base station did not acknowledge data integrity of the received data packet, transmitting control information from said base station to at least one the other base stations of the plurality of base stations, wherein the control information indicates that the data integrity of the received data packet was not acknowledged.

5. The method according to claim 3 or 4, wherein said one base station transmitting the feedback message to the communication terminal determines whether at least one of said plurality of base stations acknowledged data integrity of the received data packet by evaluating the control information received from said other base stations prior to transmitting the feedback message to the communication terminal.
6. The method according to one of claims 1 to 5, wherein said control information is transmitted from a transmitting base station via a control unit to a destination base station.
7. The method according to one of claims 3 to 6, further comprising the step of selecting said one base station for transmitting said feedback message to the communication terminal by a control unit connected to each base station of said plurality of base stations.
8. The method according to claim 7, wherein said control unit evaluates downlink channel quality information indicating the downlink channel qualities between the communication terminal and each base station of the plurality of base stations, and
selects said one base station for transmitting the feedback message to the communication terminal based on the evaluation result.
9. The method according to claim 3, further comprising the steps of:
each base station of said plurality of base stations determining downlink channel quality information indicating the downlink channel quality between the communication terminal and the respective base station,
each base station of said plurality of base stations transmitting said determined downlink channel quality information to the other base stations of said plurality of base stations,
each base station of said plurality of base stations receiving the transmitted downlink channel quality information from the other base stations of said plurality of base stations,
each base station of said plurality of base stations evaluating the downlink channel quality information received from said other base stations and the

downlink channel quality information determined by itself to determine the best downlink channel quality characteristic, and

the base station having the best downlink channel quality characteristic transmitting said feedback message to the communication terminal.

10. The method according to claim 3, further comprising the step of:

if said one base station transmitting said feedback message to the communication terminal determines that another base station has the best downlink channel quality characteristic, transmitting a selection message from said one base station to said other base station assigning to said other base station the task of transmitting a feedback message to the communication terminal for future data integrity acknowledgement.

11. The method according to claim 10, wherein the determination of said base station having the best downlink channel quality characteristic comprises the steps of:

each base station of said plurality of base stations determining downlink channel quality information indicating the downlink channel quality between the communication terminal and the respective base station,

each base station of said plurality of base stations except the base station transmitting the feedback message to the communication terminal, transmitting said determined downlink channel quality information to said base station transmitting said feedback message,

said one base station transmitting said feedback message receiving the transmitted downlink channel quality information from the other base stations of said plurality of base stations, and evaluating the downlink channel quality information received from said other base stations and the downlink channel quality information determined by itself to determine the best downlink channel quality characteristic.

12. The method according to one of claims 8 to 11, wherein the evaluation of the downlink channel quality information comprises the step of averaging parameters in the downlink channel quality information, wherein the selection is based on the averaged downlink channel quality.

13. The method according to one of claims 1 to 12, further comprising the step of:

forwarding the received data packet to a control unit in the mobile communication system by at least one of the base stations that did acknowledge data integrity of the received data packet.

14. The method according to one of claims 1 to 13, wherein the data packet is received via a dedicated channel.
15. A data packet retransmission method in a mobile communication system comprising a communication terminal and a plurality of base stations, the communication terminal being in communication with said plurality of base stations during a soft handover,

wherein each base station of said plurality of base stations comprises means for controlling and enabling data packet retransmissions between the respective base station and said communication terminal in accordance with a packet retransmission scheme, and

wherein said means comprises a buffer for storing data packets received at the respective base station for which data integrity was not acknowledged, wherein the buffer is updated using the method according to one of claims 1 to 14.
16. The method according to claim 15, wherein the retransmission scheme is a window based packet retransmission scheme using a receiver window to control packet retransmissions, and the control information exchanged among the base stations comprises a pointer pointing to the upper edge or lower edge of the receiver window.
17. The method according to claim 15, wherein the retransmission scheme is a stop-and-wait packet retransmission scheme with at least one retransmission process , and the control information exchanged among the base stations comprises a process number identifying a data packet retransmission process, and an indicator for indicating whether the data packet's integrity can be acknowledged.
18. The method according to claim 17, wherein the control information exchanged among the base stations further comprises a sequence number or data indicator identifying the received data packet at the receiving base station.

19. The method according to one of claims 15 to 18, wherein the control information exchanged among the base stations comprises an identifier identifying the communication terminal.
20. A base station in a mobile communication system comprising a communication terminal and a plurality of base stations, wherein the communication terminal is in communication with said plurality of base stations during a soft handover, and wherein said base station comprises means for implementing the method according to one of claims 1 to 19.